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EDUCATION AND INCOME OF MEXICAN-AMERICANS IN THE SOUTHWEST. MEXICAN-AMERICAN STUDY PROJECT, ADVANCE REPORT 1.

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THIS DOCUMENT IS ONE OF A SERIES OF RESEARCH ARTICLES PUBLISHED BY THE MEXICAN-AMERICAN STUDY PROJECT. THE PURPOSE OF THIS REPORT WAS TO STUDY THE RELATIONSHIP BETWEEN EDUCATIONAL ATTAINMENT AND INCOME WITHIN THE MEXICAN-AMERICAN MINORITY. DATA FOR THE STUDY WERE OBTAINED FROM THE U.S. CENSUS OF POPULATION, 1960. THE AUTHOR CONCLUDED THAT EDUCATIONAL ATTAINMENT AND INCOME OF THE MEXICAN-AMERICAN POPULATION ARE ASSOCIATED. THE SPECIFIC RELATIONSHIPS WERE ESTABLISHED BY STATISTICAL ANALYSIS. IMPLICATIONS FOR THE MEXICAN-AMERICAN MINORITY WERE GIVEN. THE REPORT IS ALSO AVAILABLE FROM THE DIVISION OF RESEARCH, GRADUATE SCHOOL OF BUSINESS ADMINISTRATION, UNIVERSITY OF CALIFORNIA, LOS ANGELES 90024, FOR $1.00. (JM)

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MEXICAN-AMERICAN STUDY PROJECT

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Division of Research
Graduate School of Business Administration
University of California, Los Angeles

Advance Report 1

EDUCATION AND INCOME OF MEXICAN-AMERICANS IN THE SOUTHWEST

by

Walter Fogel

Preliminary and Subject to Revision

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Bibliography.

MEXICAN-AMERICAN STUDY PROJECT

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by

Walter Fogel

Assistant Professor of Industrial Relations
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Foreword

In early 1964, the University of California at Los Angeles embarked on a comprehensive study of the socio-economic position of the Mexican-American population in the Southwest. The research is undertaken by a unit known as the Mexican-American Study Project and supported by a generous grant from the Ford Foundation.

Ultimately, this study should turn the spotlight on a widely neglected minority group in American society--neglected in terms of national or even regional awareness of its existence let alone its problems, in terms of social policy, and in terms of the fundamental knowledge required for intelligent remedial measures. But the spotlight will be shared by American society at large, for the condition of any minority group depends critically on the interaction between the members of the minority and the community as a whole.

In a country known as a "nation of nations," the study of minority populations and their relation to society has long since been a concern of the social sciences. The present research project is in this tradition. We believe that it is timely if not overdue. The study was begun at a time when the American public had become more conscious of the persistence in our midst of poverty, deprivation, and their manifold determinants, and when concerted efforts were initiated to grapple with these problems. In such a context it is singularly appropriate to deepen our knowledge of a population group characterized by widespread disadvantage on nearly every criterion at hand--educational attainment, occupational structure, income and wealth, housing, effective community organization and political strength, to name only a few.

The study of any minority population raises a host of questions concerning its delineation, especially when its members show substantial or increasing socio-economic and cultural differences. Identification is a statistical issue; it poses the problem of criteria for viewing a minority as a more or less cohesive community; and it is a problem to individuals in terms of self-identification.

In the case of Mexican-Americans, these problems are compounded by semantics. Every study of Mexican-Americans in the United States--in fact, practically every conversation about or within the group--begins inevitably with questions of definition. These matters will be examined more fully in the final product of this study. It suffices to say here that "Mexican-American" is used as a generic term to include people of Mexican, Spanish, or mixed Indian descents, although members of the group in various parts of the Southwest prefer to be known as Spanish-Americans or Latin-Americans or Mexicanos or by other names. The only further com-

ment warranted at this point is a note of regret. We have been unable so far to devise a short, descriptive, and immediately intelligible term that avoids the obnoxious hyphenation. Needless to say, the use of "Mexican-American" does not imply any subordinate class of citizenship or residency.

For the purpose of this study, the Southwest is defined to include five states: Arizona, California, Colorado, New Mexico, and Texas. It is in these states that the vast majority of Mexican-Americans in the United States, now estimated at 4 million, is located. The study will focus on urban areas in the southwestern region. The problems of rural Mexican-Americans, especially of migrant workers, have been rather fully investigated. Yet, the Mexican-American population has come to be highly urbanized, and the gaps in knowledge are most notorious in the urban segment. At the same time, the dividing line between urban and rural cannot be drawn sharply. A significant number of Mexican-Americans in some of the urban areas of the Southwest are employed in agriculture at least for several months of the year.

The study is scheduled for several years and its final product will therefore not be available for some time. Under these circumstances, it seems desirable to release preliminary or partial results on certain subject matters during the course of the investigation. The subject matters will vary widely in content and scope. Some advance reports may deal with broad statistical analyses, others with particular aspects of the life of Mexican-Americans, and still others with conditions in certain localities. The large variety of subject matters is illustrated by the reports scheduled for release in the near future, which are listed elsewhere. Even so, it is not intended to include all of the numerous phases of the study in these advance reports. Some parts of the project are so interwoven with others that they do not lend themselves to separate early analysis. For this reason, the selection of topics in this series should not be taken as any indication of the full range of subject matters to be included in the final product, nor should it be considered a reflection of the relative importance of various sub-studies conducted in the course of the research work now under way.

Advance reports are preliminary and subject to revision. They represent the results of individual scholarship and are issued without the benefit of consultation with academic or community advisers. Formal review and editing are reserved for the final study which will weave the materials included in the reports, as well as others, into an integrated framework of analysis.

* * *

The subject matter of this first report is one of vital significance to the Mexican-American community as well as the nation as a whole. From hundreds of informal interviews of the Project staff with key persons in Mexican-American communities throughout the Southwest, it is clear that better education is considered to be the most important gate to greater material progress. At the same time, the federal government through various programs is staking hundreds of millions of dollars on the expectation that more schooling, apart from its intrinsic value, will raise the levels of living as well as the productivity of disadvantaged groups.

Professor Fogel's work confirms the close association between educational attainment and income. His is the first study that examines this relationship for the Mexican-American minority in an analytical as well as descriptive fashion, and he places the results properly in a comparative framework which includes other minorities as well as the members of the dominant society. In comparison with others he finds that the average earnings of Mexican-Americans in the labor force have, in fact, been high relative to their average educational preparation. It would appear, then, that greater schooling could do a great deal to reduce the income gap between this minority and "Anglos."

At the same time, Fogel conveys a clear message: additional education is not automatically nor speedily converted into proportionately higher earnings for minorities, at least not at the rate experienced by the majority. To date, this unhappy conclusion has been suggested by studies of education-income relationships for only one minority -- Negroes. Among Fogel's contributions is a more generalized version of the same observation. His analysis of the path of education and income gains, together with the limited available data, indicates that Mexican-Americans as well as other ethnic groups face similar problems.

The report examines carefully and dispassionately the reasons why the incremental schooling of Mexican-Americans or other minorities is unlikely to be readily transformed into equivalent income gains for the group. Discrimination in labor markets comes to mind as a plausible single explanation. But it is only one of several, and Fogel suggests that Mexican-Americans face less difficulty on this score than do Negroes and Orientals.

Fogel's analysis introduces other factors. One is the strategically important employment shift from manual jobs, which require relatively little education for hiring and promotion, to non-manual jobs that do depend on schooling and which represent the growth sector in our modern economy. Another factor is the time it takes for young, more highly educated people from minority groups who enter the labor market in better jobs to advance with experience -- and experience comes with age. Besides, Fogel recognizes that even sophisticated statistical techniques for

measuring education-income relationships cannot plumb the depth of the problem. For example, the comparisons in the study cannot take account of differences in the quality of education obtained by individuals or groups of people. Also, persons in any segment of the population may achieve high earnings because of qualities not related to schooling. It should be clearly understood that the results of this research apply to specified groups rather than individuals.

It would be a grievous error to react to Fogel's findings in a sprit of disquietude or by relaxing the measures to improve the education of Mexican-American children. On the contrary, his study should cause the Mexican-American group and the community-at-large to assess the role of education more realistically and, by outlining the magnitude of the task, induce greater rather than less effort. In addition, more schooling strengthens an ethnic group in ways which are outside the purview of Fogel's analysis. It can provide better leadership, increase civic participation, help reduce discrimination, and yield income improvements over the generations.

* * *

The present report exemplifies the dual purpose of the research work conducted by the Mexican-American Study Project. Fogel's study advances knowledge of the population with which the Project is concerned; and this is our first objective. By extending an analysis usually undertaken for the total population or for nonwhites versus whites to other disadvantaged groups, the study contributes also to its general field of inquiry; and this is our second purpose whenever the subject matter and our resources permit. Thus, Fogel's work is relevant not only to those concerned with the Mexican-American population but also to scholars and policy-makers who are interested in the still poorly explored transformation of higher educational attainment into higher income.

Finally, it should be noted that that this report is not intended to deal with the factors associated with the below-average schooling of Mexican-Americans to-date. This subject will be taken up in another part of the over-all study.

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Leo Grebler, Director
Mexican-American Study Project

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EDUCATION AND INCOME OF MEXICAN-AMERICANS IN THE SOUTHWEST

by

Walter Fogel*

It is common knowledge that there is a positive association between education and income. The higher the education of a labor force participant, the greater is his opportunity to obtain employment in an occupation which will provide him with a comfortable income. An increasing number of high-wage jobs require high levels of schooling for employment. Even jobs which provide only average or lower earnings are likely to require high school graduation in today's labor markets. Once employed, a worker's chances for promotion and gains in income are increased by a high level of completed schooling.

The need for education cannot be avoided by working for oneself rather than for someone else. It is possible to start and operate a small business without a great deal of formal education, but people who do so usually receive only modest incomes from their efforts. Most self-employed persons who are in average or higher income brackets have at least a college education; those with the largest incomes--physicians, dentists, architects, public accountants, lawyers--usually have more.

In recent years this commonplace knowledge about the importance of education to the achievement of greater incomes has been extended and refined. Estimates have been made of the additional lifetime incomes produced by climbing successive steps on the schooling ladder. [1] Measurements are available of the pecuniary rates of return on direct and indirect expenditures for various levels of schooling.[2] These findings have been somewhat refined by taking into account income which is produced by virtue of characteristics frequently possessed by educated people independent of their educational attainment--intelligence and social contacts, for example. [3]

In addition to these analyses of the education-income relation for individuals, work has been done on the role of education in the economic progress of regions and nations. It has been amply demonstrated that education has made an important contribution to the long-term economic growth of the United States. [4] Cross-section analyses have been undertaken of the role of education in the growth of underdeveloped economies. [5]

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* Valuable comments on an earlier draft from Professor Leo Grebler are gratefully acknowledged. Computational assistance was provided by Grace Marshall and her assistants in the statistical unit of the Mexican-American Study Project.

The results of all of these investigations have provided scientific support for the almost universally held view that education is important to economic welfare. The evidence is indisputable that, for both individuals and regions, a rising level of education and higher income go hand in hand. Whether education is a cause or an effect of higher income is a question which has not yet been answered satisfactorily; [6] it is undoubtedly both so that a precise delineation of the causal nexus will not remove the role ascribed to education in economic progress.

With the dissemination and popularization of this knowledge, it is not surprising to find that more and better education became the rallying cry for remedial policy [7] when social and political attention in the United States focused on the low incomes of minority groups. Yet, the role of education in raising the incomes of minorities is largely unexplored. Very few serious studies have been made of the education-income relation among members of disadvantaged minority groups in this country, and none deal with groups other than nonwhites. Those which have been made show that low education does account in part for the low-income position of nonwhites, but they do not support the notion that white schooling levels alone will bring income parity for nonwhites. At best, less than half of the income difference between whites and nonwhites can be explained by differences in educational attainment, [8] though this proportion would probably be somewhat higher if quality of education could be included in the analyses.

Since most nonwhites are Negroes, and Negroes suffer substantially from discrimination, these results may possibly be inapplicable to other low-income groups. But this cannot be taken for granted; it is well known that groups other than Negroes suffer from some enforced social segregation--which implies that their incomes are also affected by prejudically directed conduct on the part of the majority population. This point argues strongly for additional research into the education-income relation of low-income groups, with such research encompassing a number of ethnic and racial populations.

The Mexican-American Study Project provides an excellent opportunity for this kind of investigation. An understanding of education-income relationships is important to the general purpose of the Project and especially to the study of the labor market experiences of Mexican-Americans in the Southwest (defined to include Arizona, California, Colorado, New Mexico and Texas). Since income is the end result of labor market experiences and education is an important determinant of these experiences, it is logical to investigate directly the education-income association. At the same time, the study of this relationship for the large minority population of Mexican-

Americans can add to general knowledge of the association between more schooling and larger earnings.

Because of the context of the study, Mexican-Americans will receive major attention in this report. Knowledge of their status and experience, however, is made more meaningful by comparisons with other ethnic groups that are in somewhat like circumstances. The like circumstances for purposes of this study are low incomes, cultural distinctness or separateness, and residence in the region covered by the Project. The data in the 1960 Census of Population make it possible to include in the analysis a number of ethnic groups possessing these characteristics. Because of their low incomes, they, along with the Mexican-Americans, can be considered as disadvantaged groups.

Before proceeding further it should be made clear that the analysis in this report is concerned only with educational attainment as measured by school years completed. The quality of the attainment will not be considered, not because educational quality is unimportant but rather because the data necessary to incorporate it into the analysis do not exist.

I. EDUCATION AND INCOME WITHIN THE MEXICAN-AMERICAN POPULATION

Among Mexican-Americans as well as other populations, educational attainment (schooling) and income are importantly related in general terms. The evidence in this case does not come in the form available for all whites or nonwhites for whom incomes of persons who have completed different schooling levels are reported by the Census. However, other means of demonstrating the relationship are provided in Census data. One of these is used in Table 1.

The data in Table 1 are for "white persons with Spanish surname," a group which can be considered a close proxy for Mexican-Americans in the Southwest. The data refer to males in the Southwest region classified by place of residence. It is evident that educational attainment and incomes are closely associated across the residence classifications. Median measures of both schooling and income in urban areas are roughly twice as large as the corresponding figures for people in rural farm residences.

Association of education and income can also be shown by inter-state comparisons. Spanish-surname males in the states with the highest and lowest levels of educational attainment,

Table 1

Educational Attainment and Income of Spanish Surname Males a/
in the Southwest, by Place of Residence, 1960

Residence	Median Schooling (years)	Median Income
All	8.1	$ 2,804
Urban	8.4	3,197
Rural Non-Farm	6.9	1,871
Rural Farm	4.6	1,531

a. Age 14 and over

Source: Data used to obtain this and all other tables in this report are from U.S. Census of Population, 1960; primarily from Volume I, Detailed Characteristics, and Volume IV, Subject Reports, Persons of Spanish Surname. All income data refer to 1959.

Table 2

Educational Attainment and Income of Spanish Surname Urban Males, a/
by State, 1960

	Median Schooling (years)	Median Income
Arizona	8.3	$ 3,269
California	9.2	4,179
Colorado	8.7	3,283
New Mexico	8.8	3,170
Texas	6.7	2,297

a. Age 14 and over

California and Texas respectively, also have the highest and lowest incomes (Table 2). The figures are for urban males and are thus not affected by differences among the states in urban-rural population distributions.

The inter-state comparisons disclose also that there are factors other than schooling which are important to obtaining incomes. Spanish-surname males in New Mexico have lower incomes than those in Arizona and Colorado in spite of higher educational attainment.

Table 3 provides some additional insight into the importance of education by presenting data grouped by age class. Though the figures cover only California, the relationships shown hold also for the other states in the region. Spanish surname male income compared to that of all males falls as age rises, and the declining relative incomes are accompanied by increasing differences in the median educational attainment of the two groups. The association between education and income in these data appears to be very close.

A fourth way of demonstrating a positive education-income association is provided by Table 4 where the data are grouped by nativity class of Spanish-surname urban males. The relationship here is equivocal, however. Comparisons between the foreign born and the natives of foreign or mixed parentage do show the higher incomes for the latter that would be anticipated from their greater educational attainment. Similar comparisons between second generation persons and natives of native parentage do not yield similar results. The latter group has more schooling but not the higher income which would be expected. This finding is not explained by age differences between the two groups. Though median ages of all males of the two groups differ by 14 years (natives of native parentage are younger), within the age class used for the Table, 35-44, there are no significant differences in age distributions. [9]

The failure of more schooling to be associated with higher incomes for these two nativity classes is general, existing in each of the five Southwestern states. As yet, no satisfactory explanation has been discovered. But whatever the explanation, the finding does demonstrate that higher educational attainments are not automatically accompanied by higher incomes for persons in the Mexican-American population.

It is appropriate to emphasize here again that a positive association between education and income does not necessarily demonstrate a causal nexus. The incomes of Mexican-Americans in California are higher than those of Mexican-Americans in Texas largely for the same reason

Table 3

Relative Educational Attainment and Income
of Spanish-Surname Urban Males by Age Class, California, 1960

	Age Class				
	20-24	25-34	35-44	45-64	65 and up
Differences in Median School Years Completed: Total Population Minus Spanish Surname	1.4	2.3	2.9	3.4	4.4
Ratio of Spanish Surname to Total Population Median Income	.98	.84	.81	.77	.73

Table 4

Educational Attainment and Income of Spanish Surname Urban Males,
Age 35-44, by Nativity Class, California, 1960

Nativity Class	Median Schooling (years)	Median Income
All Classes	9.5	$ 5,252
Native of Native Parentage	10.8	5,524
Native of Foreign or Mixed Parentage	9.9	5,543
Foreign Born	7.3	4,315

that there are average income differences between the total populations of the two states--higher average and marginal labor productivity in California than in Texas. It man even be argued that the higher educational attainments in California merely result from greater ability of Mexican-Americans and the total population to incur the costs of formal education in that state (including opportunity costs). There is undoubtedly some validity to this argument--higher incomes bring greater schooling. Without belaboring the point, we are inclined to the view that causality runs more strongly in the other direction. In other words, the probability that Mexican-Americans will be able to obtain employment in urban California, where incomes are higher than in rural Texas, increases with rising educational attainment. For this reason, higher schooling results in higher incomes for Mexican-Americans much as it does for other persons. However, it is unnecessary in this report to engage in a full discussion of the difficult problem of causality.

II. COMPARISON OF DIFFERENT POPULATION GROUPS

We can conclude, not unexpectedly, that educational attainment and income of the Mexican-American population are indeed associated. Does this mean that the incomes of Mexican-Americans compared to those of other groups are largely dependent upon their relative education? A general answer to this question can be given by comparing the Mexican-American (Spanish surname) population with "Anglos" and with selected minority groups. Anglos in this study are defined as the whites exclusive of the Spanish surname population.

Table 5 provides the information for each of the five states of the Southwest in a relatively crude form. These data are for urban and rural males combined. An exclusively urban basis would diminish the usefulness of analyses to be presented later in the report; certain necessary data for these analyses are available only for urban and rural areas combined. Urban proportions of the populations shown in Table 5 are quite similar with the exception that Indian groups live predominantly in rural residences, at least outside of California. [10] The reader should recognize that the low urban proportions for Indians have the effect of reducing their schooling and especially their incomes compared to those which would be shown by residence standardizations.

Table 5

Median Educational Attainment and Income of Ethnic Group and Anglo Males, a/ by State, 1960

Ethnic Group	Arizona		California		Colorado		New Mexico		Texas	
	Schooling	Income	Schooling	Income	Schooling	Income	Schooling	Income	Schooling	Income
Spanish Surname	6.7 yrs.	$3,325	8.5 yrs.	$4,381	8.1 yrs.	$3,308	7.7 yrs.	$3,004	4.8 yrs.	$2,400
Nonwhite	6.8	2,116	10.2	3,951	11.1	3,631	7.0	2.285	7.5	2,161
Indian	5.0	1,500	9.2	3,344			5.3	1,750		
Negro	8.1	2,604	9.8	3,922						
Chinese			10.1	4,141						
Filipino			8.2	3,105						
Japanese			12.4	4,800						
Anglo	12.1	5,168	12.1	5,806	12.1	5,003	11.4	5,573	10.8	4,768

a. age 25 and over

In general it can be seen that Spanish surname males have low educational attainments. Nonwhites and Negroes (where enumerated) have higher schooling in all states except New Mexico where the low levels of Indian schooling reduce the nonwhite median. The Chinese and particularly the Japanese in California also have more schooling; the Filipinos with their relatively rural and aged population do not. Compared with Anglos, Spanish surname males have their best schooling position in California and their lowest position in Texas.

The income positions of the Spanish-surname group are remarkably better than their positions on educational attainment. Their incomes are higher than those of nonwhites except in Colorado and are higher than Indian incomes in the three states where the latter are enumerated by the Census. Only the Japanese among the Orientals have larger incomes than Spanish-surname males. Again, the states with the highest and lowest Spanish surname-to-Anglo ratios are California and Texas, respectively.

The contrast between the educational attainment and income of the Spanish-surname group is obvious. Their ranking on income is much higher than on schooling. Nevertheless, when Spanish-surname males and Anglos are compared, the highest relative income of the former is found in California where they also show their best educational attainment in comparison with Anglos. Conversely, the Spanish surname-Anglo differences on both schooling and income are largest in Texas. Regardless of what causes the Spanish-surname population to have larger incomes than the other ethnic groups in spite of less education, it can be seen from interstate comparisons that their income position relative to Anglos depends upon their educational attainment.

III. ADJUSTMENTS OF INCOMES FOR DIFFERENCES IN EDUCATIONAL ATTAINMENT

From data published in the 1960 Census of Population it is possible to estimate more precisely the contribution of low levels of schooling possessed by the Spanish-surname and other ethnic groups to the income differences which exist between these groups and the Anglo population. The technique used is explained fully in the Appendix to this report. The procedure begins by assigning the same median incomes to the schooling distributions of all groups. Hypothetical mean incomes are then computed from the income of each "school years completed class" weighted by the numbers of persons in each class. The hypothetical incomes of ethnic groups computed in this manner differ from each other and from a similarly computed Anglo income only because of differences in schooling distributions. Ratios of these incomes, Anglo to ethnic group, show the extent to which the larger Anglo incomes can be explained by higher schooling levels. Illustrative computations based on California Anglo and Spanish-surname data are shown in Table 6. [11]

The computed Anglo income is 1.21 times larger than that of the Spanish-surname group. This means that greater schooling alone can account for Anglo incomes being 21 per cent higher than those of Spanish-surname males in California in 1959. The income differences which would still remain after the schooling distributions have been standardized can be obtained after raising the Census reported Spanish-surname income by the factor of 1.21.

The results of this estimating procedure are given in Table 7; they are based on the use of nonwhite incomes by schooling class, which were considered to be more appropriate than those of the total population, the only other group for which comparable data are available. (For a discussion of this decision and for alternative results based on total population incomes by schooling class, see Appendix.) Findings are shown for the nonwhite populations and for their component groups (in the states where they have been enumerated by the Census), as well as for the Spanish-surname population. Data availability dictated a state rather than an urban basis for the estimates. The schooling distributions which were used were first adjusted to remove the effects of age differences among the populations (see the Appendix for the method used in this procedure).

Finally, a qualification must be noted before the results are discussed. If the correlation between schooling and income among Anglos is in part due to other factors which bring income to educated people, for example superior intelligence, the importance of schooling in explaining the low minority-group incomes will be over-estimated. A recent study suggests that these other

Table 6

Illustrative Computation of Hypothetical Spanish Surname and Anglo Mean Incomes from Schooling Distributions, California, 1960

School years completed	Males With Income, 1960 a/ (In thousands) Spanish Surname X_1	Anglo X_2	Median income Nonwhite Males a/ 1959 Y	X_1Y	X_2Y
0	41.9	38.5	$ 2,049	85853	78887
1-4	57.0	107.7	2,784	158688	299837
5-7	61.9	307.4	3,470	214793	1066678
8	47.5	514-0	3,670	174325	1886380
9-11	58.2	721.7	4,026	234313	2905564
12	45.4	939.5	4,372	198489	4107494
13-15	18.7	529.2	4,698	87853	2486182
16 and up	11.5	500.0	5,820	66930	2910000
	$\Sigma X_1=342.1$	$\Sigma X_2=3658.0$		$\Sigma X_1Y=1,221,244$	$\Sigma X_2Y=15,741,022$
	$\bar{Y}x1 = \$3,750$			$\bar{Y}x2 = \$4,303$	

a. From U.S. Census of Population, 1960

Table 7

Adjustment of Ethnic Group Relative Incomes
for Differences in Educational Attainment a/

(All incomes expressed as proportions of Anglo income)

Median Income Proportions b/

	Arizona				Colorado	
	Spanish Surname	Nonwhite	Negro	Indian	Spanish Surname	Nonwhite
O_I	.643	.409	.503	.294	.661	.725
H_I	.646	.650	.738	.567	.842	.945
A_I	1.00	.63	.68	.52	.79	.77

	New Mexico			Texas	
	Spanish Surname	Nonwhite	Indian	Spanish Surname	Nonwhite
O_I	.543	.410	.314	.503	.453
H_I	.715	.655	.595	.656	.805
A_I	.76	.63	.53	.77	.56

	California						
	Spanish Surname	Nonwhite	Negro	Indian	Japanese	Chinese	Filipino
O_I	.755	.681	.676	.576	.827	.713	.535
H_I	.829	.905	.895	.887	.995	.887	.877
A_I	.91	.75	.76	.65	.83	.80	.61

a. Based on males, age 25 and over

b. Symbols refer to proportions computed from the following: O_I - original incomes (Table 5); H_I - hypothetical incomes computed from educational distributions as described in text; A_I - adjusted incomes, i.e., O_I/H_I. For further explanation see text and the Appendix at the end of this report.

factors are not very important in bringing about the schooling-income correlation.[12] Nevertheless, the results in Table 7 should be considered as maximum estimates of the explanatory value of educational attainment to the minority-Anglo income differences.

The first row of figures (O_I) under each state heading in Table 7 shows ethnic group proportions of Anglo income computed from the unadjusted median incomes in Table 5. The Spanish-surname males compare favorably with other ethnic groups, as has already been noted. Their 1959 incomes were higher than those of nonwhites in all states except Colorado and were considerably higher than Indian incomes. Even where the Spanish-surname group can be compared with some of the better-off nonwhite populations, as in California, their income position among all groups is quite favorable (though well below the Anglo level). Only the Japanese enjoyed higher incomes.

The proportions in the second row (H_I) are based on hypothetical incomes computed from distributions of school years completed as described above. They can be considered as giving the proportion of Anglo income which each ethnic group would receive if their relative incomes were determined solely by their educational attainment distributions. On this condition, relative incomes of Spanish-surname males would have been higher than they were in fact in all states except Arizona. In other words, outside of Arizona actual income differences between Anglos and Spanish-surname males were greater than would have been expected on the basis of schooling differences.

When the comparison shifts to education-determined incomes of different ethnic groups (also in row H_I), a different picture emerges. If relative incomes were wholly determined by educational attainment, the positions of Spanish-surname males would have been worse than they actually were. Only Indian males in Arizona and New Mexico, and all nonwhites in New Mexico would have had lower incomes. Differences between schooling-determined incomes for Spanish-surname and nonwhite males are fairly large in California, Colorado, and Texas, -- in favor of nonwhites. The results for the Chinese and Filipinos do not differ much from those for nonwhites and Negroes, but the calculations for Japanese males reflect the fact that their educational attainment levels are as high as those of Anglos in California.

It should be clearly understood that the H_I proportions result from a computational comparison of schooling distributions between each group and Anglos. The lower the proportion, the less favorable the comparison. From this procedure it is more clearly evident than from the median measures in Table 5 that Mexican-Americans in the Southwest rank near the bottom of all dis-

advantaged ethnic groups in regard to educational attainment.

We turn now to the third row of figures (A_I) to observe the results after all incomes have been adjusted for schooling differences. The adjustment is given as: $A_I = O_I/H_I$. This procedure amounts to raising the original income of each ethnic group by a factor equal to the Anglo relative income which would result from the Anglo schooling advantage alone, that is, $1/H_I$. The adjusted income proportions depend upon two things: the schooling-determined relative incomes and the original ratio of ethnic group to Anglo income. If schooling differences between an ethnic group and Anglos are large, removing them will bring a considerably higher adjusted income to that group. But even this adjusted income is still likely to be well below that of Anglos if the original income differences were large.

The results of this adjustment show that removal of schooling differences between Spanish-surname and Anglo males brings substantial improvement to the former's income. Parity in educational attainment with Anglos would raise Mexican-American incomes from about three-quarters of Anglo incomes to 91 percent in California, from roughly half to 77 percent in Texas, from nearly two-thirds to equality in Arizona, from about 55 percent to 76 percent in New Mexico, and from 66 percent to 79 percent in Colorado. More strikingly, the adjusted income ratios of the Spanish-surname males are the highest of any ethnic group in all five states. On the basis of present relationships, if all of the minority groups shown were to achieve educational attainment levels equivalent to those of Anglos, the Spanish-surname group could expect to receive the highest minority incomes. This finding will call for additional interpretation at a later point.

Adjusted incomes for all nonwhites and for Negroes are well below those of the Spanish-surname population, and those for Indians, where shown, are the lowest of all. Orientals in California also have lower adjusted incomes than the Spanish-surname male population.

These results demonstrate that a substantial portion of the income differences between Anglo and Spanish-surname males can be explained by differences in educational attainments, but that this is not true for the other ethnic groups, as is evidenced by the percentages in Table 8. The other groups are already rather close to Anglos in terms of educational attainment, or, where this is not the case, their incomes are so far below Anglo incomes that standardization for schooling still leaves their adjusted incomes well below those of Anglos.

Mexican-Americans have a long way to go before they catch up with the educational attainment

of the Anglo population. But catching up would appear to have a higher payoff for them than for other minority groups. This is a conclusion about the future, however, while the data in Table 7 refer to the present or rather the recent past. For more sharply focused insights into the future we must attempt to enlarge upon the static analysis used in Table 7.

IV. DYNAMIC RELATIONSHIPS BETWEEN EDUCATION AND INCOME

Our results show that educational attainment differences "explain" more of the present income differential for the Spanish surname population than for the other ethnic groups. However, it does not follow automatically that the Spanish surname population would have the highest income of all of the minority groups included in this study if these groups were to achieve Anglo schooling levels. Such a conclusion would be a dynamic proposition while the methods employed here have been static. It is hazardous to predict future incomes from an analysis of the explanatory importance of education at one point in time, where the income influence of other factors is held constant. When the dimension of time is considered, influences on income other than education may change, or they may operate differently than they did in the past.

Some Evidence

What would happen to the average income of Mexican-Americans if they were to match Anglos on schooling attainment in the dynamic world where incomes are obtained from activities and in amounts which are constantly changing? Would their relative incomes rise to the levels indicated by the education adjustments shown in Table 7, or would they stop at the level of the Japanese in California who already have educational parity with Anglos? Or, as a third possibility, would these relative incomes only attain the level of the education-adjusted incomes shown in Table 7 for Negroes? If the last alternative were to occur, there would be very little improvement in Mexican-American incomes relative to those of Anglos, none whatever in California, since actual incomes of the Spanish-surname group in 1959 were so close to the adjusted incomes of Negroes.

These questions cannot be answered without greater understanding of the income differences among ethnic groups in our society than we now have. Some insight might be obtained if changes in Mexican-American schooling and income could be traced through time; however, the data available for this purpose are inadequate. The little information that exists discloses that

Table 8

Percent of Difference Between Ethnic Group and Anglo
Median Incomes Explained by Education Distribution of Ethnic Group a/

	Spanish Surname	Nonwhite	Negro	Indian	Japanese	Chinese	Filipino
Arizona	99	37	36	32			
California	63	22	24	19	2	30	16
Colorado	37	15					
New Mexico	48	37		32			
Texas	53	20					

a. Using the symbols from Table 7, the computation from was $\frac{A_I - O_I}{1 - O_I}$

between the 1950 and 1960 censuses of population increases in the educational attainment of Spanish surname males relative to Anglos were greater than increases in their relative incomes.[13]

In Arizona, Colorado, and Texas the percentage change in the Spanish surname-Anglo ratio of school years completed was more than twice as large as the change in the income ratio. Only in California did relative incomes move up more rapidly than the schooling ratio. Neither ratio changed in New Mexico.[14] If the experience of the 1950's were to continue, the Spanish surname group would attain Anglo educational attainment levels well before they achieved income equality. Since the data do not permit detailed analysis of this experience, their value for predicting the future is dubious.

Information which is available on the experiences of the Japanese and Negroes is more helpful. In 1940 the median schooling of urban Japanese males in California was only two-tenths of a school year below that of the total population in that state; in 1950 and 1960 the Japanese medians were half a year higher.[15] Yet, as we have seen, Japanese incomes in 1959, after at least twenty years of educational equivalence, were still only about five-sixths of the total population level.* A study of Negro experience has recently shown that between 1949-1959 the ratios of Negro to white income fell in all four regions of the United States.[16] Yet, the ratios of Negro to white educational attainment in the United States rose from .700 to .745 and almost certainly rose in each region as well, though data are not available for intercensal regional comparisons.[17]

* It is likely, however, that Japanese incomes in 1959 were lower than they would have been had the Japanese not been evacuated from the West Coast during World War II.

The Path of Education and Income Gains

These pieces of evidence intimate that improvement in the educational attainment of some minorities may not be accompanied by comparable gains in income. The evidence, though fragmentary is supported by the logic of the development of schooling and incomes of ethnic, racial, or otherwise distinguishable populations as they progress from low-status positions in our society.

The incomes of disadvantaged populations are now and have historically been obtained primarily from employment in low-skilled manual occupations which require little if any formal education for entry. Progress relative to the rest of the population from disadvantaged income and education positions occurs most rapidly in incomes. Occupational upgrading to more skilled jobs within the manual sector of employment can come about through assimilation into the society (through trade unions, for example) and through increased labor market information, even without significant improvements in the educational attainment of low-status groups. (This is probably becoming less true as the schooling level of the general population rises, because employers are able to use schooling as an efficient applicant screening device). Educational attainment at this stage is likely to lag behind income since the former is improved mainly over generations while the latter can rise through the occupational upgrading process in a matter of years. Exceptions to the initially low level of education may exist or have occurred in a few instances where immigrant groups entered the United States with high levels of educational attainment. But even for these atypical groups income will improve more quickly than schooling.

Once a group's occupational distribution within the manual sector has become similar to that of the rest of the population, further gains in relative income will depend primarily upon obtaining employment in the non-manual sector, particularly in the managerial, professional and selected sales occupations which provide high earnings. But employment in these occupations cannot be obtained without meeting formal education prerequisites which are much higher than those required for most manual jobs.

As a consequence of education barriers which prevent immediate entry into non-manual employment, the rate of improvement in the ratio of income of the group to that of the total population slows down and may become negative if the structure of employment in the total economy is shifting rapidly towards white collar jobs. Aside from occupation shifts, the extent of the decline in this rate depends upon the time required to raise the educational attainment of the group to the

level of the rest of the population. Because most non-manual jobs yielding high earnings require schooling qualifications of four years or more in excess of those which are sufficient for manual employment, the time involved will be more than a few years and may take several generations. It will also be longer the larger the population increments to the group from immigration and births. Immigration ordinarily brings persons of low schooling into the labor force of the group, and high birth rates make it difficult to provide the desired schooling for all children before they must seek employment.

In other words, at the time that a group has become well established in employment in the manual sector, there is likely to be a large difference between its average educational attainment and that of the total population. Though some persons will attain the majority level quite quickly, it will take much longer before the average schooling of the group and of the total population reach equality. Because of the time required to shift the educational level of a group upwards by several school years, entry into and distribution among non-manual occupations in proportions approaching those of the total population will occur much more slowly than in the manual sector. Therefore, gains in relative incomes from the point in time where equivalent status in manual employment is obtained will be slower than those which occurred earlier.

Furthermore, parity of educational attainment with the total population will be achieved while relative income lags behind. This will be so in part because earnings rise with age for all populations in almost all occupations. [18] The educational attainment level of the labor force of the group is raised to that of the majority population through entry of young persons into the labor market. But before this process brings consequences for relative incomes, these young persons must advance to higher earning jobs within the broad occupational classifications in which they are employed. Such advancement usually occurs through promotions and inter-firm job shifting, and it is importantly associated with experience and, through experience, with age. Income from assets, though relatively unimportant, will also rise with the passage of time once high educational attainment has been achieved.

For some groups, the major reason for the gap between their incomes and those of the total population as educational attainment parity is achieved will be discrimination in employment. The extent and intensity of the discrimination will affect both the initial income gap (when the group attains the majority level of educational attainment) and the length of time required to achieve the majority income level.

As discussed, the high educational requirements for the better paying non-manual jobs slow the the occupational and income progress of minority population relative to the majority. Discrimination in labor markets has the same effect, but it does so by ignoringor at least downgrading the educational and other qualifications of the minority. Operating in this fashion discrimination is a much more invidious barrier to income progress than is the barrier of schooling requirements. The latter can be overcome with resources and effort; it is not clear (particularly to the minority group) that the same is true of discrimination. For some groups job discrimination causes fewer minority persons to be willing to incur the costs of higher education than would otherwise be the case, though for other groups the opposite appears to be true. Either way, a strong "taste for discrimination" directed against a minority population in labor markets has an adverse impact on its earnings relative to the majority and increases the time required to overcome the income gap.

A schematic attempt to encompass these notions of the dynamic relation between education and income is presented in Figure I. Relative educational attainment and income of the hypothetical minority group portrayed start at about the same level although, in some instances, the former may exceed the latter at this time. This starting point, when the group first begins to advance discernibly in income, may occur almost immediately after a group has come into a society, as in the case of some immigrant populations, or it may occur only after the minority has been in the society for some time as in the case of Negroes and Indians (if, indeed, relative income gains have yet begun for the latter).

The diagram shows income rising more rapidly than schooling up to the vicinity of A where the non-manual employment barrier is encountered. Since this is largely an educational barrier, schooling may now begin to advance more rapidly, as is indicated in the diagram. Whether its rate of change increases or not, relative educational attainment will surpass relative income and will at some time match or at least come close to the total population schooling at B. At this point there is a gap between educational attainment and income which narrows and disappears at a rate largely dependent upon the time required to enlarge the practices of non-discriminatory hiring, promotion and business leading. Of course, abilities of the minority that are independent of schooling and the group's aspirations have been ignored in this discussion. They may be such that complete parity with majority incomes will never be achieved or, on the other hand, will be obtained earlier than the diagram suggests.

Implications for the Mexican-American minority

This general framework of hypotheses can be used to help us understand the present position of Mexican-Americans and to provide some insight into their future progress. There can be little doubt that Mexican-Americans historically have had little schooling and low incomes. Their small incomes resulted originally from being employed predominantly in agriculture on jobs for which schooling was unimportant. But beginning in the 1920's and especially during and after World War II, many Mexican-Americans moved out of agriculture into employment in industrial manual occupations. With the exception of some craftsmen and foremen classifications, they are now distributed among the various manual occupations much as is the rest of the population. We can surmise that this occupational upgrading over at least the past twenty-five years was accompanied by steady gains in relative income, though no data are available to demonstrate this trend.

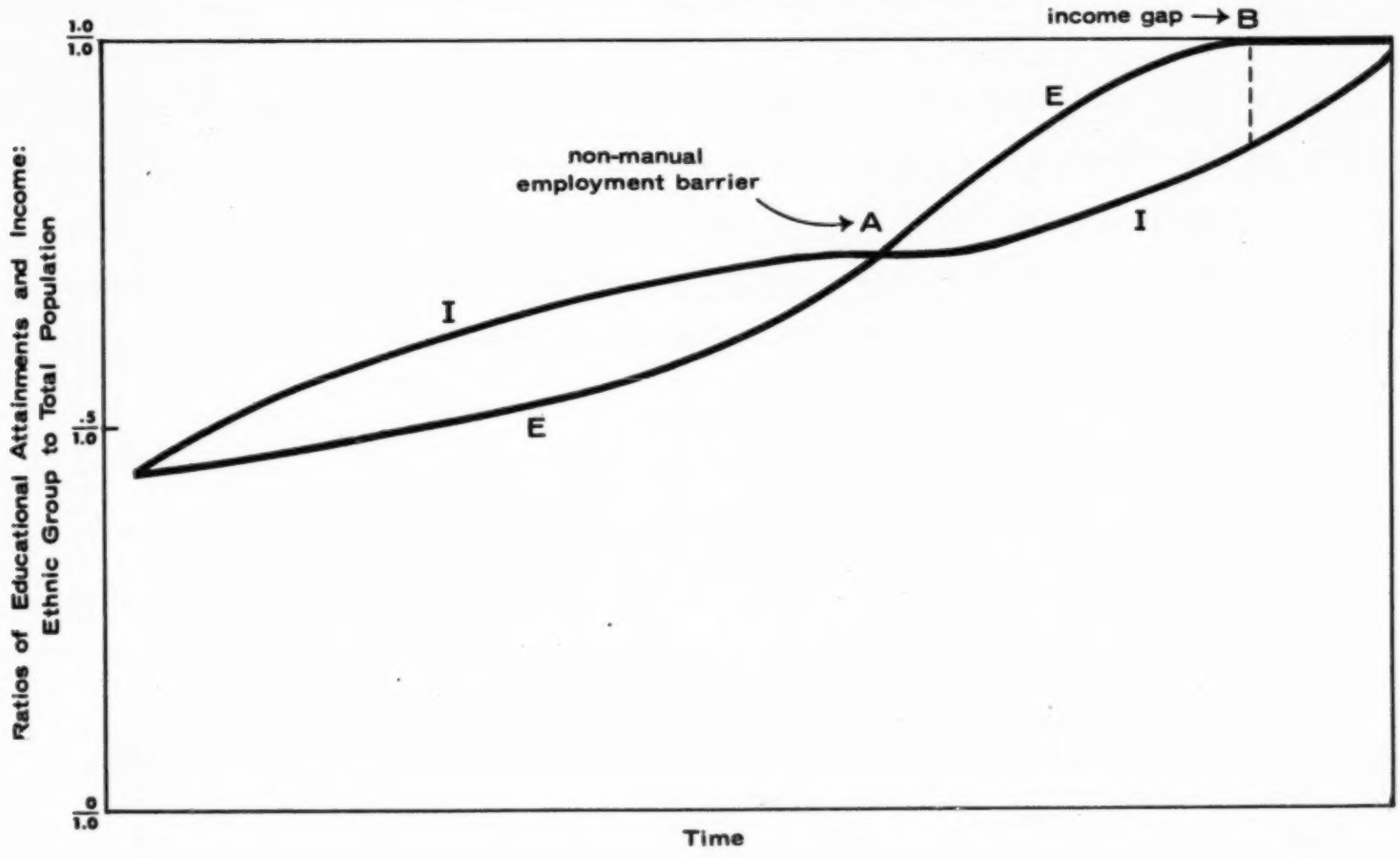
Educational attainment among Mexican-Americans cannot be traced further back than 1950.[19] Gains in schooling before that time were probably slow, partly because of the sizeable immigration from Mexico during the 1920's. As stated earlier, between 1950 and 1960 the ratio of educational attainment of Mexican-Americans to the total population increased a little more than did the median income ratio, but it was still lower than the latter in 1960. It appears that Mexican-Americans in the Southwest are near position A in Figure I -- in some of the states to the left of it, in others to the right.

Further gains in relative income for this group must come primarily through increasing the proportion of those who are employed in the non-manual sector. In 1960 only 19 percent of Mexican-American urban males in the five Southwestern states were employed in non-manual occupations, and very little of this employment was in high-wage classifications. In contrast, 47 percent of Anglo males in the region were in this sector, more than half of them in managerial and professional positions.[20]

Some further income gains can be made by moving from unskilled agricultural and industrial labor jobs into higher-wage manual occupations, but they will be small at best. One reason for this projection is that employment is not growing very rapidly in many kinds of manual jobs and is actually declining in others. In the future there will be an excess supply of labor available for the better jobs which do open up in this sector, with part of the supply consisting of other minority groups and particularly Negroes. But the most important reason for expecting little gain in

FIGURE I

Hypothetical Time Profiles of Relative Educational Attainment (E) and Income (I) for Ethnic Populations



relative income from upgrading manual employment is the shift in the structure of employment toward non-manual occupations. The proportion of Anglos (and the total population) employed in these occupations, particularly the high-wage positions, is rising rapidly. Unless Mexican-Americans can shift into these jobs even more rapidly, their relative incomes will not rise significantly.

In order to obtain non-manual employment in larger numbers, there must be sharp increases in the educational attainment of Mexican-Americans entering the labor force in the future. The prospects for such a shift in the immediate future are limited. Table 9 discloses that school enrollment of Spanish surname males compared to Anglos drops sharply after age 19. The figures can be interpreted as showing that the proportion of Anglo males entering the labor force who are eligible for jobs requiring at least some college preparation is twice as great as the Spanish surname porportion. This difference in educational preparation obviously is a handicap for Mexican-American efforts to obtain high-wage non-manual employment in proportion to their population. Moreover, school enrollments of the United States population at higher education

levels have been climbing sharply in recent years, [21] which means that the Mexican-American population must run hard just to maintain its present position even though that position is not advantageous.

Since there are such large differences between Mexican-Americans and Anglos in schooling preparation for non-manual occupations, it is very probable that Mexican-Americans will go through an extended period in which their educational attainment position rises markedly faster than their income position. During this period they may even experience a decline in relative income, particularly if the occupational wage structure is widening, as it shows some signs of doing. [22]

Table 9

Percentage of Spanish Surname and Anglo Males
Enrolled in School by Selected Age Class, California and Texas, 1960

	California		Texas	
Age Class	Spanish Surname	Anglos	Spanish Surname	Anglos
16-17	74	85	61	82
18-19	37	43	34	50
20-21	15	27	14	30
22-24	10	19	8	17

Subsequently, Mexican-Americans will arrive at parity of educational attainment with Anglos (B in Figure 1) well before their incomes approach this condition - and both events may be decades away. But this observation leaves unanswered the difficult question of the size of the income gap between Mexican-Americans and Anglos (at B in Figure I). What relative incomes can be expected by this group once the very large task of becoming competitive with the majority population in terms of educational qualifications has been accomplished?

Some response to this question is possible in a comparative context. Based on present relationships, Mexican-Americans could surely anticipate higher incomes than Negroes if both groups were to reach Anglo-equivalent education levels. As we have seen, Mexican-American incomes already exceed those of Negroes even without the benefit of better education. It is also likely that Mexican-Americans would have larger average incomes than Orientals for, like Negroes, the

Chinese and Filipinos presently have greater schooling but smaller incomes than the Mexican-American group. While it is true that Japanese persons have larger incomes, they also have much more schooling, and the chances would seem to be at least even that Mexican-Americans will catch up in incomes before thay do so in education.

These judgments are based upon the results of this study, primarily those shown in Table 7 of the report. No attempt has been made to account for the findings presented there--that is, for the comparatively high income position of Mexican-Americans inspite of their low educational attainment. Further research is required before this can be done. Even then the available data and other information may not permit a firmly supported explanation. Preliminary investigation suggests that the favorable Mexican-American experience is not explained by the more readily ascertainable labor force characteristics--occupation, industry, urban-rural and city size residence patterns. Thus, the answers may lie in dimensions which are difficult to measure - motivations, abilities, and labor market discrimination that is less intense than against other minorities.

To the extent of their relevancy to future income gains of Mexican-Americans, the above observations are complemented by research which has been done on attitude reaction to different ethnic groups. One of these studies queried persons in general population samples as to the desirability of specified social relationships with various ethnic groups. [23] The responses from these questions indicated that the "social distance" from the majority population of the groups included in our analysis was in the following rank order (from least to greatest): Mexican-Americans--Orientals--Negroes. [24] This study was conducted in 1946, almost twenty years ago, but similar research carried out twenty years earlier produced the same ranking. Thus, the relationships may still hold today.

These findings, together with the education-adjusted incomes calculated in the present study, tentatively suggest that Mexican-Americans face less discrimination in labor markets than do Negroes and Orientals. [25] Consequently, raising their educational achievement to majority levels, while unlikely to produce income equality with the majority until much later, would bring sizeable improvement over present levels and larger incomes than could be obtained by Negroes and Orientals in similar circumstances.

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APPENDIX

Method of Adjusting Minority Group Relative Income for Minority-Anglo Schooling Differences

The adjustment procedure utilized the following identifications:

Let

M and A denote the median [26] incomes of male members of a minority group and of Anglo males respectively;

M_r, the minority group relative income (O_I in Table 7);

m_i and a_i, the fractions of each group with i years of schooling; i ranges from 0 to 16 plus years;

M_i and A_i the median income of minority group and Anglo males with i years of schooling.

To obtain the effect of differences in educational attainment distributions on minority group relative income, define the following hypothetical income measures:

$$M_e = \Sigma_i (M_i m_i)$$

$$A_e = \Sigma_i (M_i a_i)$$

Then,

$$M_e/A_e = M_{re} \quad (H_I \text{ in Table 7}),$$

the minority group relative income when the M_i and A_i are the same; that is, when all males with i years of schooling receive the same incomes. M_e and A_e will differ because of differences in schooling distributions (the m_i and a_i). Therefore,

$$1/M_{re} \text{ or } \frac{A_e}{M_e}$$

is the factor by which the unadjusted minority group income must be raised in order to remove the effects of the group's low educational attainment distribution.
Thus,

$$M_r/M_{re} = M_{ra} \quad (A_I \text{ in Table 7}),$$

the relative income of the minority group adjusted for differences in educational attainment. In other words, M_{ra} is the minority group relative income when the $m_i = a_i$.

The arithmetic form which gives the proportion of the minority-Anglo unadjusted income difference (A - M) accounted for by schooling differences is

$$\frac{\text{M adjusted - M,}}{\text{A - M}}$$

or, alternatively, with relative incomes

$$\frac{M_{ra} - M_r}{1 - M_r}$$

The only minority median incomes by schooling class (M_i) which are available in the Census are those for all nonwhite males (denoted as N_i). In addition, schooling class incomes are available for the total male population (denoted as P_i). The N_i and P_i weights provide alternative estimates of the minority-Anglo income differences (in index form) which result from differences in schooling. The education adjustment factor, $1/M_{re}$, and, thus, the adjusted incomes, and minority-Anglo income differences explained by education will all be smaller with the N_i than with the P_i. This is best explained by the following relationships:

$$1/M_{re} = \frac{1}{M_e/A_e} = \frac{A_e}{M_e} =$$

(a) (b)

$\frac{\Sigma_i N_i a_i}{\Sigma_i N_i m_i}$ with the N_i, and $\frac{\Sigma_i P_i a_i}{\Sigma_i P_i m_i}$ with the P_i.[27]

$1/M_{re}$ is smaller with (a) than with (b) if

$$\frac{\Sigma_i P_i a_i}{\Sigma_i N_i a_i} > \frac{\Sigma_i P_i m_i}{\Sigma_i N_i m_i}, \text{ or if } \Sigma_i \left(\frac{P_i}{N_i}\right)(a_i - m_i) \text{ is a positive expression.}$$

This expression will be positive where P_i/N_i is near unity when $i = O$, and is positively correlated with $a_i - m_i$. This is the case for the minority groups dealt with here. Note that P_i/N_i is also positively correlated with school years completed ranked from 0 - 16.

Which is the most appropriate basis for the estimating procedure, the N_i or P_i? This is the familiar index number problem.

The purpose here is to learn what happens to minority group incomes when the m_i are changed to equal the a_i. When the minority group is all nonwhites or Negroes (by far the largest component of the nonwhite population), estimates based on P_i go beyond merely answering that question

because they incorporate, implicitly, an assumption that when the m_i become the same as the a_i, the positive correlation between P_i/N_i and school years completed is eliminated. This is an unwarranted assumption because there is no reason to believe that the presently existing correlation will change merely because these groups increase their schooling. Therefore, the N_i are more appropriate for estimates involving all nonwhites and Negroes.

The problem is more complex when the m_i refer to the Spanish surname and other minority populations since their M_i are not available. The general economic and social situations of these groups appear to be more like that of nonwhites than like that of the total population; thus, the N_i probably provide a more accurate representation of the M_i than do the P_i.

On this basis it was decided to use the N_i for the estimates shown in Table 7 of the text. However, the correctness of that judgment can be questioned, particularly in view of some inferential evidence that, if we did know the M_i, we would find that P_i/M_i is less highly correlated with school years (ranked from 0 to 16) than is P_i/N_i. [28] Therefore, Table 10 presents alternative estimates comparable to those in Table 7 of the text except that the P_i were used for these estimates. Comparison of the two tables discloses that the P_i give considerably higher estimates of the education adjusted incomes. In other words, education explains more of the minority-Anglo income differences when the P_i are used.

As was indicated, it is not clear which of the two bases provide the better measures of the importance of minority-Anglo schooling differences to their income differences (except for all nonwhites and Negroes for whom the estimates in Table 7 are clearly more appropriate). The author's judgment on this matter is evident from the relegation of the P_i estimates to this appendix.

Finally, it is necessary to explain the standardization of schooling distributions for age. The m_i and a_i were adjusted for the effects of differences in age distributions in the following manner: For each minority group the number of males in the age classes 25-34, 35-44, 45-64 and 65 and over were adjusted so that the percentage of males in each of these classes matched the Anglo precentage. The adjusted numbers in each age class were then distributed to the school year classes (0-4, 5-7, 8, 9-11, 12, 13-15, 16 and over) on the basis of the precentage distribution by schooling class of the original number of males in that age class. Finally, the numbers in each schooling class were aggregated across the four age classes to obtain the adjusted distribution of males, 25 and over, by school years completed.

Table 10

Adjustment of Ethnic Group Relative Income for Differences in Educational Attainment: [a] Based on Use of Total Population Male Schooling Class Incomes (P_i) for Computation of Indexes of Relative Income from Schooling Distributions

(All incomes expressed as proportions of Anglo income)

	Arizona				Colorado	
Income Proportions [b]	Spanish Surname	Nonwhite	Negro	Indian	Spanish Surname	Nonwhite
O_I	.643	.409	.503	.294	.661	.725
H_I	.639	.652	.744	.571	.720	.92
A_I	1.01	.63	.68	.51	.92	.80

	New Mexico			Texas	
	Spanish Surname	Nonwhite	Indian	Spanish Surname	Nonwhite
O_I	.543	.410	.314	.503	.453
H_I	.684	.629	.564	.579	.742
A_I	.79	.65	.56	.87	.61

California

	Spanish Surname	Nonwhite	Negro	Indian	Japanese	Chinese	Filipino
O_I	.755	.681	.676	.576	.827	.713	.535
H_I	.758	.865	.848	.829	1.00	.841	.823
A_I	1.00	.79	.80	.70	.83	.85	.65

a. Based on males, age 25 and over

b. Symbols refer to proportions computed from the following: O_I - original incomes (Table 5); H_I - hypothetical incomes computed from educational distributions; A_I - adjusted incomes, i.e., O_I/H_I.

FOOTNOTES

1. P.C.Glick and H.P.Miller,"Educational Level and Potential Income,"American Sociological Review, June 1956, pp. 307-317

2. For example see Gary Becker, Human Capital, New York, National Bureau of Economic Research, 1964. W. Lee Hansen, "Total and Private Rates of Return to Investment in Schooling", Journal of Political Economy. April 1963, pp. 128-41.

3. Becker, op. cit., Ch. IV; James Morgan, et. al., Income and Welfare in the United States, New York, McGraw-Hill, 1962, Chs. 5,6, and 23.

4. Edward F. Denison, The Sources of Economic Growth in the United States, Supplementary Paper no. 13, Committee for Economic Development, New York, 1962: T.W. Schultz, "Education and Economic Growth," in Social Forces Influencing American Education, Sixtieth Yearbook of the National Society for the Study of Education, Chicago, 1961, Part II, Ch 3.

5. Frederick Harbison and Charles A. Myers, Education, Manpower and Economic Growth, New York, McGraw-Hill 1964.

6. See W.G. Bowen, Economic Aspects of Education, Industrial Relations Section, Princeton University, 1964.

7. See, for example, The Economic Report of the President, 1965, p. 158 and pp. 166-7.

8. See Morton Zeeman, "A Comparative Analysis of White-Nonwhite Income Differentials in the United States," unpublished Ph. D. dissertation, University of Chicago, Department of Economics, 1955, Ch 4; Paul Siegel, "On the Cost of Being a Negro, Sociological Inquiry, Spring, 1965.

9. See U.S. Census of Population, 1960, Subject Reports, Persons of Spanish Surname, Table 2

10. The urban percentages of the ethnic group male labor forces are as follows:

	Arizona	California	Colorado	New Mexico	Texas
Spanish Surname	68	82	68	55	77
Nonwhite	45	90	85	40	77
Indian	11	52		16	
Negro	75	92			
Chinese		96			
Filipino		74			
Japanese		86			
Anglo	78	86	73	70	74

Computed from U. S. Census of Population, 1960

11. The general form of the computation is $\frac{\Sigma_i (X_i Y_i)}{\Sigma_i X_i}$
Where Xi = the number of male persons of the ethnic group in the ith school years completed class and Yi=the median income of nonwhite males in the ith school years completed class.

12. Gary S. Becker, op. cit., pp.79-88. Note that even if the schooling-income correlation among Anglos is partially a result of other characteristics possessed by well educated persons this does not imply overestimates of the education adjusted minority incomes unless educated minorities do not possess these characteristics to the same extent as Anglos. It does imply that part of the income improvement attributed to education will, in fact, be due to the other characteristics.

13. Based on computations from U.S. Census of Population, 1950 and 1960

14. These statements of schooling and income change should be viewed cautiously, however, for the following reasons: 1) the income changes are for males and females combined because ethnic group incomes are available only in this form for 1949; a change in the female proportion of income earners during the period could affect the median income changes because females have lower incomes; 2) no adjustment was made for changes in residence distributions.

15. U.S. Census of Population, 1940, 1950 and 1960

16. Alan Batchelder, "Decline in the Relative Incomes of Negro Men "Quarterly Journal of Economics, Nov. 1964, pp. 525-548

17. Batchelder believes, however, that a decline in the quality of Negro education brought about by migration of Negroes from the South more than offset the gains in school years completed relative to the white population. He does not provide evidence to support this view. See Batchelder, ibid, pp. 536-8

18. See U.S. Census of Population, 1960, Subject Reports, Educational Attainment, Table 9

19. Inferential data on school enrollment are available. For example, in the 1910 foreign born white population of Texas - three quarters of which consisted of persons of Mexican birth - 23.7 percent of the age group 6-20 were enrolled in school; the comparable figure for the total population was 58 percent. See Thirteenth Census of the United States, Abstract of the Census, 1913, p. 227

20. Based on data from U.S. Census of Population. 1960

21. See U.S. Bureau of the Census, Current Population Reports, Series P-20, No. 133 and No. 138, February and March 1965.

22. See, for example, Martin Segal, "Occupational Wage Differentials in Major Cities during the 1950's" in Mark Perlman (ed.) Human Resurces in the Urban Economy, Resources for the Future, Washington, 1963, pp. 195-207

23. Emory S. Bogardus, "Changes in Racial Distances," International Journal of Opinion and Attitude Research, Dec., 1947, pp. 55-62. For similar findings on Mexican-American-Negro comparisons see Alphonse Pickney, "Prejudice toward Mexican and Negro Americans: A Comparison," Phylon, Winter, 1963, pp. 353-59

24. I have averaged the rankings of the Chinese, Filipinos and Japanese groups to obtain a single ranking for Orientals. See Bogardus, ibid.

25. For reasearch which can be interpreted as providing additional support for this conclusion, see Lyle W. Shannon and Elaine Krass, "The Urban Adjustment of Immigrants: The Relationship of Education to Occupation and Total Family Income," Pacific Sociological Review, Spring 1963, pp. 37-47; and Leland S. Burns and Alvin Harman, Profile of the Los Angeles Metropolis - Its People and Its Homes, Part 5, The Complex Metropolis, Real Estate Research Program, Graduate School of Business Administration, University of California, Los Angeles, 1965

26. Medians were used primarily for convenience - they are computed in the Census publications while means are not. It was ascertained through trial calculations with computed means that their use would not have given important differences from the results shown here. For a conceptual discussion of the use of means and medians for income estimation, see E.F. Renshaw, "Estimating the Returns to Education," Review of Economics and Statistics, August 1960, pp. 318-24.

27. (a) and (b) are indexes in the Laspeyres and Paasche form respectively.

28. See sources cited in footnote 25.